

CLAIMS

1. A Bayer process which includes a step of treating  
treating any one or more of: (a) Bayer liquor or liquors  
5 produced in the process, (b) precipitated aluminium  
trihydrate particles produced in the process, and (c)  
other solids added to or produced in the process, with  
ultrasonic energy and destroying organics in the liquor or  
liquors, on the precipitated aluminium trihydrate  
10 particles, and on the other solids.
2. The process defined in claim 1 wherein the  
treatment step is carried out on a Bayer liquor or liquors  
and/or precipitated aluminium trihydrate particles from  
15 any part of the Bayer process.
3. The process defined in claim 1 wherein the  
treatment step is carried out on side streams of the Bayer  
liquor or liquors from any part of the Bayer process.  
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4. The process defined in any one of the preceding  
claims wherein the treatment step is carried out on a  
Bayer liquor or liquors and/or precipitated aluminium  
trihydrate particles and/or other solids that have  
25 relatively high concentrations of organics compared to  
other Bayer liquors and particles in the process.
5. The process defined in any one of the preceding  
claims wherein the precipitated aluminium trihydrate  
30 particles are intermediate and fine seed particles that  
are separated from a precipitation slurry from a  
precipitation step of the Bayer process.
6. The process defined in any one of the preceding  
35 claims wherein the other solids is a collector material  
for organics.

7. The process defined in claim 6 wherein the treatment step includes separating the collector material with attached organics from the Bayer liquor or liquors into a side stream and treating the side stream with  
5 ultrasonic energy and destroying organics on the collector material.

8. The process defined in claim 7 wherein the treatment step includes regenerating the collector  
10 material for reuse in the process to collect more organics for ultrasonic energy treatment.

9. The process defined in any one of claims 6 to 9 wherein the collector material includes resins and  
15 activated carbon.

10. The process defined in any one of claims 6 to 10 wherein the collector material includes particles or beads of collector material.  
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11. The process defined in any one of claims 6 to 11 wherein the collector material includes particles or beads of collector material that are sufficiently large to be readily separated from Bayer liquor.  
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12. The process defined in any one of claims 6 to 11 wherein the collector material is a material that has a higher density than Bayer liquor to facilitate separation from Bayer liquor by settling.  
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13. The process defined in any one of claims 6 to 11 wherein the collector material is a material that has a lower density than Bayer liquor and/or is hydrophobic to facilitate separation from Bayer liquor by flotation.  
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14. The process defined in any one of claims 6 to 13 wherein the collector material is a material that can be

separated magnetically.

15.           The process definrd in claim 14 wherein the collector material includes fine particles prepared by  
5   applying an organic/polymer coating onto fine precipitated iron containing particles.

16.           The process defined in any one of the preceding claims wherein the treatment step includes treating the  
10   Bayer liquor or liquors and/or precipitated aluminium trihydrate particles and/or other solids with ultrasonic energy of sufficiently high energy that it causes cavitation in Bayer liquor or at the surface of the particles.

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17.           The process defined in any one of the preceding claims wherein the treatment step includes treating the Bayer liquor or liquors and/or precipitated aluminium trihydrate particles and/or other solids with a continuous  
20   stream of ultrasonic energy or pulses stream of ultrasonic energy.

18.           A Bayer process which includes a step of treating Bayer liquor or liquors produced in the process with  
25   ultrasonic energy and destroying organics in the liquor or liquors.

19           A Bayer process which includes a step of treating precipitated aluminium trihydrate particles produced in  
30   the process with ultrasonic energy and destroying organics on the particles.

20.           A Bayer process which includes a step of treating a collector material for organics added to the process  
35   with ultrasonic energy and destroying organics on the collector material.